

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A macro pixel, comprising:

at least two color pixel elements of substantially equal pixel area, each color pixel element including a photoreceptor having a device geometry, responsive to receiving light, to generate an output signal indicative of an amount of light photons received, the device geometry of each photoreceptor comprising a size, a shape, a depth and a position;

the photoreceptor of a first of the color pixel elements receiving a first color of light and having a first geometry and a responsivity to said first color of light that is a function of the first geometry;

the photoreceptor of a second of the color pixel elements receiving a second color of light different from the first color of light and having a second geometry different from the first geometry and a responsivity to said second color of light that is a function of the second geometry; and

the first geometry and the second geometry being such that the responsivity of the output signal of the first of the color pixel elements to the first color of light is a predetermined ratio of the responsivity of the output signal of the second of the color pixel elements to the second color of light.

2. (Original) The macro pixel of Claim 1 wherein the photoreceptor of each color pixel element is selected from the group consisting of n-wells, n+ diffusion, p-wells, p+ diffusion, and photogates.

3. (Original) The macro pixel of Claim 1 wherein the photoreceptor of each color pixel element is an n+ diffusion.

4. (Original) The macro pixel of Claim 1 wherein the predetermined ratio is about 1:1.

5. (Previously presented) The macro pixel of Claim 1 further comprising a third one of the color pixel elements, to receive a third color of light different than the first color of light and the second color of light, the photoreceptor of the third one of the color pixel elements having a third geometry and a responsivity to light that is a function of the third geometry of the photoreceptor.

6. (Previously presented) The macro pixel of Claim 5 wherein the first geometry, the second geometry, and the third geometry are selected such that the responsivity of the output signal of the first of the color pixel elements to the first color of light, and the responsivity of the output signal of the second of the color pixel elements to the second color of light, and the responsivity of the output signal of the third one of the color pixel elements to the third color of light is a predetermined ratio.

7. (Original) The macro pixel of Claim 6 wherein the predetermined ratio is about 1:1:1.

8. (Original) The macro pixel of Claim 1 further comprising a microlens photonically coupled to at least one of the color pixel elements.

9. (Original) The macro pixel of Claim 6 further comprising corresponding microlenses photonically coupled to each of the color pixel elements.

10. (Original) The macro pixel of Claim 1 wherein at least one of the color pixel elements further comprises at least one switch coupled to the photoreceptor to vary the device geometry.

11. (Original) The macro pixel of Claim 10 wherein the at least one switch actively varies the device geometry.

12. (Original) Wherein the macro pixel of Claim 1 is included in a color pixel assembly, the color pixel assembly including a plurality of macro pixels.

13. (Currently amended) A CMOS color pixel assembly, comprising:
a plurality of macro pixels, each macro pixel of the plurality of macro pixels comprising:

at least three color pixel elements of substantially equal pixel area, each color pixel element including a photoreceptor having a device geometry, responsive to receiving light, to generate an output signal indicative of an amount of light photons received, the device geometry of each photoreceptor comprising a size, a shape, a depth and a position;

a first one of the color pixel elements, configured and arranged to receive a first color of light, the photoreceptor of the first one of the color pixel elements having a first geometry and a responsivity to light that is a function of the first geometry of the photoreceptor;

a second one of the color pixel elements configured and arranged to receive a second color of light different than the first color of light, the photoreceptor of the second one of the color pixel elements having a second geometry different from the first geometry and a responsivity to light that is a function of the second geometry; and

a third one of the color pixel elements, configured and arranged to receive a third color of light different than the first color of light and the second color of light, the photoreceptor of the third one of the color pixel elements having a third geometry and a responsivity to light that is a function of the third geometry of the photoreceptor.

14. (Previously presented) The color pixel assembly of Claim 13 wherein the first geometry, the second geometry, and the third geometry are selected such that the responsivity of the output signal of the first one of the color pixel elements to the first color of light, and the responsivity of the output signal of the second one of the color pixel elements to the second color of light, and the responsivity of the output signal of the third one of the color pixel elements to the third color of light is a predetermined ratio.

15. (Original) The color pixel assembly of Claim 14 wherein the predetermined ratio is about 1:1:1.

16. (Original) The color pixel assembly of Claim 13 wherein the photoreceptor of each color pixel element is selected from the group consisting of n-wells, n+ diffusion, p-wells, p+ diffusion, and photogates.

17. (Original) The color pixel assembly of Claim 13 further comprising a microlens photonically coupled to at least one of the color pixel elements.

18. (Original) The color pixel assembly of Claim 13 further comprising corresponding microlenses photonically coupled to each of the color pixel elements.

19. (Original) The color pixel assembly of Claim 13 wherein at least one of the color pixel elements further comprises at least one switch coupled to the photoreceptor to vary the device geometry.

20. (Original) The color pixel assembly of Claim 19 wherein the at least one switch actively varies the device geometry.

21. (Previously presented) A color pixel assembly including at least one macro pixel, the macro pixel comprising:

at least three color pixel elements having equal pixel areas, each color pixel element including a photoreceptor having a device geometry and at least one switch configured and arranged to selectively change the device geometry, responsive to receiving light, to generate an output signal indicative of an amount of light photons received, the device geometry of each photoreceptor comprising a size, a shape, a depth and a position;

a first of the color pixel elements, configured and arranged to receive a first color of light, the photoreceptor of the first of the color pixel elements having a first geometry and a responsivity to light that is a function of the first geometry of the photoreceptor, the responsivity of the output signal of the photoreceptor to the first color being controllable by changing the first geometry;

a second of the color pixel elements configured and arranged to receive a second color of light different than the first color of light, the photoreceptor of the second of the color pixel elements having a second geometry and a responsivity to light that is a function of the second geometry, the responsivity of the output signal of the photoreceptor to the second color being controllable by changing the second geometry; and

a third one of the color pixel elements, configured and arranged to receive a third color of light different than the first color of light and the second color of light, the photoreceptor of the third one of the color pixel elements having a third geometry and

a responsivity to light that is a function of the third geometry of the photoreceptor, the responsivity of the output signal of the photoreceptor to the third color is being controllable by changing the third geometry.

22. (Previously presented) The color pixel assembly of Claim 21 wherein the first geometry, the second geometry, and the third geometry are controlled such that the responsivity of the output signal of the first of the color pixel elements to the first color of light, and the responsivity of the output signal of the second of the color pixel elements to the second color of light, and the responsivity of the output signal of the third one of the color pixel elements to third color of light is a predetermined ratio.

23. (Original) The color pixel assembly of Claim 22 wherein the predetermined ratio is about 1:1:1.

24. (Original) The color pixel assembly of Claim 21 wherein the photoreceptor of each color pixel element is selected from the group consisting of n-wells, n+ diffusion, p-wells, p+ diffusion, and photogates.